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The Office Action rejection of Applicant's claims 1, 2, 19 and 21 as amended by Applicant's amendment, dated 19 October 2001, causing such claims to read "a holographic image corrector comprising a microscope...", under 35 USC 132, as new matter, is respectfully traversed.

The Office Action states that the specification "herein" only gives support to a holographic image corrector to be employed in a microscope and not to comprise a microscope. The Office Action goes on to say that the specification discloses that the holographic corrector is a single optical plate that is impossible to comprise a microscope which is a complicated optical system. However the Office Action may be referring to an amendment "for a microscope" to certain claims such as claim 1, which was withdrawn, as shown in Applicant's most recent amendment of 19 October 2001.

No
For the scope of the phrase "holographic image corrector", in the specification, one need only review Applicant's summary of the invention on pages 3 and 4, which defines the scope of an image corrector which has components a), b), c) and d) and which includes the hologram (or optical plate) in paragraph c) thereof. That is, the hologram is just an element of Applicant's defined image corrector.

fix
But
it
does not
comprise
The next paragraph on page 4 states that the image corrector of the invention provides for aberration correction of an optical system such a microscope. That is, such image corrector can fix define a microscope, such as shown in Applicant's Figures 4, 6, 12 and 14. Clearly, there is no way that Applicant's claimed invention as described and shown in the drawings, can be limited to a mere holographic element.

The Office Action rejection of claims 12, 16, 18, 33 and 37 as indefinite under 35 U.S.C. 112, second paragraph, is respectfully traversed.

Applicant is unable to determine the reasons for rejection of claims 12, 18 and 37 which is stated to be as set forth in the previous Office Action of 19 July 2001. This is because there is no specific rejection to those three claims and it is ambiguous which rejection is meant by the Examiner. It is requested that the Examiner in the future, repeat any previous rejection so that it is clear to Applicant which one is intended.

As to the objection to claims 16 and 33, which are specified in the above Office Action, they have been corrected as indicated and the above rejection thereto is believed met.

The Office Action rejection of claims 1, 2 - 8, 12 - 14, 15 - 17, 18, 19, 20, 21 - 26, 29 - 31, 32 - 36, 37, 38 and 39, as obvious under 35 U.S.C. 103(a) over the Schock et al Article is respectfully traversed.

Again the Office Action states that the reasons for rejection are set forth in a previous Office Action and is requested again that the Examiner bring forward the previous rejection into the present Office Action for clarity of rejection.

The Office Action does state that claims 1, 2, 19 and 21 are rejected as new matter and not enabled under 35 U.S.C. 112 but this is believed a misinterpretation of the scope of Applicant's specification and of his drawings 4, 6, 12 and 1'4, which interpretation is believed to undercut the entire rejection above under 35 U.S.C. 103(a). That is, Schock et al make no suggestion of a holographically corrected microscope or any other type of microscope.

Thus as stated in Applicant's previous response, the Office Action would make too many changes to Schock in replacing a plexi-glass cylinder with a lens, reversing the direction of the beam of his Figure 7 and placing an object to be viewed in his plexi-glass cylinder, which would hinder fluid flow and destroy Schock's intended function of monitoring fluid flow, all in an attempt to reconstruct Applicant's holographically corrected microscope as claimed. No motivation is seen for destroying the function of the Schock cylinder by making the changes

noted above, absent Applicant's disclosure. This appears to be a case of hindsight reconstruction that does not establish obviousness, In re Civitello 144 USPQ 10.

Again the flow cylinder of Schock et al is not seen to suggest a microscope, let alone Applicant's claimed holographically corrected microscope.

In her response to arguments, it is noted that the Examiner brings up that Friedl teaches that a lens is used as an optical element. However, Friedl discloses a multi-step method of correcting a telescope and thus neither reference suggests the holographically corrected microscope as disclosed, illustrated and claimed by Applicant.

As noted in Applicant's most recent Amendment, in addition to the structural distinctions noted, Applicant's claims include method claims, e.g., claims 15, 18 and 32 which define a method of image correction in a microscope that is not suggested by either or both of the prior art references.

Thus Applicant's invention makes possible various sized microscopes which can provide clearer images, from flawed and low cost objectives, which microscopes are not suggested in the prior art and have previously been unavailable to the public until the present invention thereof.

Also as noted in Applicant's previous amendment:

Applicant's claims 21 et seq, are directed to a holographic microscope which employs an array of pinholes, which array has not been seen in the prior art in correcting lenses and certainly not in a microscope, per Applicant's claims.

The Office Action would dismiss this distinction by stating that array of pinholes is an obvious manner of design choice but cites not a single reference in holograph lens correction to support this generalization.

The Office Action further states that the specification fails to teach the criticality of having a pinhole array that would overcome any problem of using a single pinhole plate.

However, an example of such criticality is found in claim 36, where a reference beam is added to the reconstruction of a hologram (e.g., in Figure 15), that interferes with the hologram image so as to produce a fringed pattern thereon to permit extracting height information for a contour map of the object viewed. It happens that this contour map is only possible with an array of pinholes.

Also, the use of an array of pinholes to correct an objective in a microscope and to have a broad field of view is a structural feature of claims 21 et seq that is nowhere seen in the prior art. Thus, as the Office Action has not pointed out a reference that remotely suggests such claims, they are believed to have considerable novelty.

As to the Examiner's response to arguments, if the position of the Office Action is that since both references teach writing holograms for correcting aberrations of an optical system, no one else can obtain a patent in this area, no matter what holographic devices they invent, that would seem to be an overly sweeping view of the subject.


That is, a holographically corrected microscope has not been seen in the prior art even though the Friedl patent has been issued since at least 1971 and the Schock et al article was published in 1984. Yet despite the age of these references, the need for low cost microscopes (with high quality corrected lenses) was not met until Applicant's present invention, which would seem to negate the purported obvious combination of these two references.

As for the method of claim 36, it is believed highly novel in its use of two interference patterns, to provide a contour plot of an image. And no art has been cited which remotely suggests the novelty of this claim.

In view of the foregoing, the claims of record as amended, are believed distinguished over the applied art and in condition for allowance. Early notice of allowance is requested.

In accordance with Section 714.01 of the M.P.E.P., the following information is presented in the event that a call may be deemed desirable by the Examiner: Thomas C. Stover, (781) 377-3779.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "T. C. Stover", written in a cursive style.

THOMAS C. STOVER
Attorney for Applicant
Registration No 22,531

Marked-up version of claims to show changes made to the above clean version.

1. (Four Times Amended) A holographic [image corrector comprising, a] microscope [which has] comprising,

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a) an optical system having an objective,
b) at least one pinhole mounted before said objective,
c) means for recording the characteristics of said objective by sending a first laser beam through said pinhole and through said objective or reflecting said beam therefrom to form an object beam,

[b)] d) means for intersecting said object beam with a reference laser beam in a recording medium to form a hologram of said objective, said laser beams being coherent,

e) means to replace said pinhole with an article and
f) means to illuminate said article with a beam of the same wavelength as said laser beams so that light therefrom passes through or reflects off said objective and diffracts through or off said hologram and provides a corrected image of said article.

16. (Thrice Amended) The method of claim 15 employing [an] said objective at a working distance of at least 10 in. from said article.

33. (Thrice Amended) [A] The method of claim 32 employing [an] said objective at a working distance of at least 10 in. from said article.

Exhibit A

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